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ABSTRACT

A review of the literature on the use of portfolio assessment has revealed a variety of formats and functions across many disciplines. Reports reviewed for this paper were from professional schools in education, engineering, library science, school and public administration, and vocational studies. Across various programs of study, portfolios serve many functions and purposes. Conclusions drawn from this review indicate that authentic assessment using portfolios is useful for facilitating student-centered learning that transfers to the workplace, and is both valid and reliable when program goals are clearly aligned with classroom activities. An appendix lists the 28 sources reviewed. (Contains 2 tables and 23 references.) (Author/SLD)

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Portfolio Assessment: How far have we come?

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Abstract

A review of the literature on the use of portfolio assessment has revealed a variety of formats and functions across many disciplines. Reports reviewed for this paper were from professional schools in education, engineering, library science, school and public administration, and vocational studies. Across the various programs of study, portfolios serve many functions and purposes. Conclusions drawn from this review indicate that authentic assessment using portfolios is useful for facilitating student-centered learning that transfer to the workplace, and is, both valid and reliable, when program goals are clearly aligned with classroom activities.

The need for authentic methods for assessing educational outcomes has led to a move from quantitative measures to a more an open-ended qualitative format. Through the use of portfolios, students are able to select and evaluate their own products of learning and present these for final certification before entering their respective professions. In addition, the portfolio provides, not only method for assessment, but also is a catalyst for learning. These measures are dependent on process, as well as outcomes, from the learning experience. Using the processes for selection, evaluation, and alignment of work samples with a particular standard for excellence would likely help the student transfer what is learned within the laboratory setting to the real world of work (Wolf, 1998).

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The move from criterion referenced testing to authentic testing has not been without debate (Koch & Schwartz-Petterson, 2000; Parson, 1998). Some of the concerns include the reliability and validity of portfolio assessment. There are many reports for low correlation of

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scores among assessors in addition to differences in quality and quantity of artifacts. This suggests that the portfolio may not be a reliable method for testing students and for predicting future performance in their professions. There are also questions related to formatting, whether the traditional paper-based is better or the more space-efficient electronic version. What should be the function of the portfolio? Should it be a culminating receptacle for the student's best work, or should it be a more dynamic display of learning and professional growth over time. This review of the literature examined some of the advantages and disadvantages associated with the use of portfolios within different professions. The purpose was to define characteristics that are common across a variety of programs and disciplines, and based on these reports, suggest strategies for the successful implementation of portfolio assessment.

Functions and Purpose

One of the earliest reported uses for the portfolio was in the visual arts for the purposeful collection of one's best work (Friedman Ben David, et al., 2001). Many schools continue the use of the showcase portfolio to display exemplary student products as a culminating experience and for prospective employers (Baltimore & Hickson, 1996). When using this type of showcase portfolio, there are no comparisons between entry-level work and expert performance by the student. Thus, the contents of this portfolio do not provide substantial evidence that training or education has had notable impact on the student.

With the increasing demands for accountability within education, an important use of the portfolio is evaluation of student performance, and as a method of assessment before recommending for license to work within the profession of teaching. Because of our society's evolution from industrial to informational environments, there is an important emphasis on authenticity in student learning experiences. The workplace is looking for candidates who can

examine their environment, draw logical conclusions, and develop problem solving strategies based on a given situation (Weiner, 2000). This is accomplished through the use of situated problem solving and authentic assessment of outcomes from learning (Young, 1995).

A third important use of portfolio is program evaluation (Weiner, 2000). Portfolio assessment requires the careful analysis of program goals and objectives and how these are transferred to the classroom. Student artifacts should mirror program goals. When this is evident within the portfolio, evaluation of the program of study is facilitated.

Formats for the portfolio vary. The traditional binding of documents is still commonplace, however, electronic and online versions frequently appear in the literature (Lockledge & Weinmann, 2001). As we migrate from a paper-based society to digital, this appears to be the format of choice. There are several functions that are typical of all formats and categories for portfolios. These are outlined in Table 1.

Table 1. Functions and benefits for the use of portfolio assessment in professional programs.

Functions	**Benefits**
Mastery of skills	Evidence is provided using performance indicators; developed from professional standards
Achievement of objectives	Artifacts and other documents in support of the student's achievement provide concrete evidence for mastery of objectives.
Artifacts that represent best practices	For culminating experiences in the program and for evaluation by perspective employers, the students' best work is presented in an organized and orderly format.
Organization Skills	Whether electronic or traditional paper-based, students develop skills for selection of work samples that are aligned with standards.
Documents from culminating experiences	Develop rationales for match of work samples, artifacts, and other documents that are aligned with professional standards.

Types of Portfolios

Regardless of format, function, or purpose, portfolios can be classified as either *capstone experience* or a record for *process for learning*. The capstone portfolio includes stand-alone evidence for mastery of program objectives, examples of student's best work, and documents from culminating experiences. Typically, accomplished students who are about to enter their chosen profession are associated with the capstone category. Programs that require the capstone (or showcase) portfolio should specify work samples that will be of interest to prospective employers and artifacts that are cognizant of the profession. In addition, expectations and

standards for best practices must be clearly communicated to the student (Skawinski & Thibodeau 2002).

A second category is the *process or learning portfolio*. The contents represent processes for cognitive growth, interrogation of the learning environment, self-assessment using recognized standards, and transference of learning to the workplace. For the instructor or faculty member, there is a responsibility to the student to monitor cognitive growth as a result of assigned projects and field experiences. By providing cognitive scaffolds for reflection, self-assessment, and strategies for making changes, the process approach to learning is exemplified within the contents of the portfolio (Murphy, 1997). The instructor/assessor acts as a guide or proctor during the development of the portfolio, and models collaborative practices as mentor and mentee work together to select artifacts and other evidence that show growth over time. An important role of the instructor/assessor is to provide critical commentary and invite the student to defend, justify, and make adaptations to his or her work samples. The dialog between faculty and student can be very productive during these advising sessions.

In addition to evaluation of student learning, either process or capstone portfolios, are useful for the analysis of a program of studies. Program evaluation is facilitated when key players for the portfolio process are committed to the necessary time requirements, practices for self-evaluation, and adoption of authentic assessment methodologies (Campbell, et al., 2000; Baume & Yorke, 2002). For the student, this means gaining skills as a reflective practitioner. He or she must be willing to adopt the process-approach for learning. This means entering the program as a novice, accepting critical commentary, working through revisions, and planning for the future. For the assessor, it requires a commitment for adequate time with students for mentoring (Freidus, 1996) and modeling for reflective practices. In addition, there must be time

devoted to careful planning for program goals, objectives, and classroom activities that reflect these objectives.

Reliability and Validity

A major consideration with implementation of portfolio assessment is reliability of measures and validity of the assessment. Latrobe and Lester (2000) discovered in their Library Science program that establishing valid measures is difficult because competent performance may… "vary in depth, in approach, and in the specificity of the professional work addressed…..". Although it is difficult to gather data related to reliability in portfolio assessment, (Friedman Ben-Davis & et al., 2001) as a result of this review, several studies were identified, and were supportive of, portfolios for assessment purposes (Baume & Yorke, 2002). Other reports are not as encouraging (Koretz, 1998). There are, however, certain characteristics that were apparent in programs with reports for reliable use of portfolio assessment. Measures are reliable when there is evidence that portfolio contents represent an accurate picture of the program goals/objectives or other recognized standards for the profession (Bullock & Hawk, 2001; Campbell, et al.,2000; Pitts, Coles, & Thomas, 2001; Routledge & Willson, 1997). In addition, correlations among assessors' scores are high when there is evidence for clear-cut indicators of acceptable performance. Another characteristic associated with the reliable use of portfolios is the selection of artifacts, either specified in advanced or self-selected by the student, these should be representative of program goals and objectives. Along with specific criteria, there are standardized levels of difficulty and consistency in characteristics of the evidence or artifacts. Reports from the literature suggest that correlations can be very low when there are inconsistencies among artifacts. Reliability measures were high when clear-cut criteria for evaluation had been agreed upon by assessors and performance indicators were representative of

the standards or competencies adopted by the program. Reliability measures were also high with reports for sufficient training of assessors.

One strategy used by programs to ensure strong reliability and validity measures was through collaborative meetings to reach consensus on scores. When planning implementation of portfolios, faculty should meet to analyze the strength of relationships between program goals, performance indicators, and quality of the portfolio contents. Typically, there are three assessors assigned to a team. Contents are evaluated by the first 2 assessors who score independently. When there are wide differences in scoring, a third assessor reads and evaluates only those sections with disparate scores. (Baume & Yorke, 2002; Friedman Ben David, et al, 2001; Davis, et al., 2001; Skawinski & Thibodeau, 2002) Of the studies reviewed, the third reader usually scores in agreement with "pass" or "marginally pass". Careful alignment of program objectives with course activities, clear communication of expectations aligned with these objectives, and a specified standard for formatting and presentation of the portfolio were all associated with valid and reliable measures.

Advantages and Disadvantage of Portfolio Assessment

Reviews from a variety of publications have revealed advantages, as well as disadvantages, for use of portfolios to measure outcomes from student learning (Callison, 2000; Challis, 1999; Johnson, et al., 2000; Parsons, 1998; Stecher, 1998). In Table 2, a compilation of advantages and disadvantages reported from across programs and disciplines reveals benefits for the process portfolio as a learning tool and method for program evaluation.

Table 2. Comparison of reported advantages and disadvantages for portfolio assessment.

Advantages	Disadvantages
Program Evaluation and Enhancement	**Time Investment**
Establishes common, performance-based outcomes for a particular program of study.	Additional time needed for program planning, revision, and enhancement.
Promotes communication, collaboration, and consensus among faculty, which becomes evident to the student in the classroom.	Additional time needed for course revision and enhancement.
Authentic assessment influences the form and content of the classroom instruction.	Substantial time investment for reading and evaluating contents of portfolio.
Program goals and objectives are reinforced and validated.	Training for assessors is needed.
Integration of all coursework reflected in a final product.	
Student Learning	**Student Conferences**
Facilitate student-centered learning environments.	Relationship between student and advisor may not be productive.
Students are able to articulate professional objectives.	Faculty may not be willing to negotiate contents for the portfolio.
Students solve problems within domain-specific context.	Additional time needed for student advising.
Students are able to see connection between national standards and field experiences.	Student may not gain skills for self-evaluation and critical feedback.
Articulate supporting evidence through self-selected artifacts.	
Benefits from mentoring	**Reliability and Validity**
Instructor/assessor is able to provide timely feedback.	Assessors do not always agree on what contributes to the value of the portfolio.
Instructor/assessor provides critical commentary.	Inter-rater reliability is not always evident.
Support and affirmation are exchanged.	Consensus among assessors is difficult to achieve.
Instructor/assessor provides cognitive scaffolds.	Program may not have clearly defined goals and objectives.
Facilitate skills in collaboration.	Level of difficulty for self-selected artifacts and other documents may vary from student to student, semester to semester.
Model the selection and use of appropriate resources.	Assigned artifacts and other documents may not be representative of standards or program objectives.
Model coping skills within professional context.	Contents may be loosely connected without a unifying statement or defense.
Formatting	**Formatting**
Development process facilitates skills for organization and self-selection of evidence in support of student learning.	Paper based format is cumbersome and requires considerable storage.
Electronic format requires less physical storage space and adds portability.	Electronic and online formats require additional technical skills for the student and the assessor.
Online and electronic format provide hypertext linking for easy reading and review.	Online format requires computer server space.

Many professional programs include the "showcase" portfolio as part of the student's culminating experience. These are used primarily for displaying best work samples in anticipation of job interviews. A higher purpose for the use of portfolios is a tool for constructed learning. Problems and questions that are situated within authentic context are investigated. Solutions are underpinned with theories and principles aligned with professional standards. The student must be able to articulate how his or her solutions and products reflect the criteria established by the standard. This facilitates transfer to actual working situations as the student enters his or her initial professional setting.

As the instructor/assessor guides and provides council during the development of the contents of a student's portfolio, there is opportunity for dialog and exchange of ideas. The student is able to see the modeling of professional behaviors, attitudes, and skills from a closer perspective than the usual interactions within the classroom setting. Indeed, the continual evaluation of assignments, and how these relate to professional standards, affirms the student's professional goals, or in some cases, leads to consideration for a change in career paths. For the instructors and faculty of the program, there is opportunity for collaboration with colleagues to examine and evaluate program goals and objectives. Individual evaluation of program objectives and how these are reflected in course syllabi, activities, and assignments are a natural product of the process portfolio.

This review revealed many advantages for portfolios, but there were disadvantages cited as well. There is growing evidence that portfolio assessment is a valid measure of skill and concept attainment, and that there is reliability of measurement for predicting student achievement following graduation. However, research in this area of assessment is still limited. It

is difficult to obtain data. There are misconceptions about the purpose and functions for portfolios, and authentic assessment requires a large investment of time. Additional time is needed for training of assessors and for counseling students. From this review and from my own observation of the portfolio process, the additional time needed is outweighed by benefits for student learning and for program improvements. The issues for validity and reliability should be considered before implementation. Faculty should clearly define any or all of the following: program objectives, national or professional standards and competencies, and performance indicators that represent the standards. These should be communicated to the student when entering the program. In addition, students should be advised and mentored with regard to quality of portfolio contents and how these reflect the specified standards and objectives. Finally, assessors should be trained in both consensus scoring and independent scoring procedures, and in determining a holistic evaluation of the final product.

Articles reviewed for this paper were collected from a variety of sources and represent a diversity of professional schools. A bibliography of sources is included in Appendix I.

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